

The Scope of Modern Psychology

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BY

W. G. SMITH, M.A., PH.D.

COMBE LECTURER IN GENERAL AND EXPERIMENTAL PSYCHOLOGY



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THE SCOPE OF MODERN PSYCHOLOGY

THE foundation in this University of a Lectureship in General and Experimental Psychology is a noteworthy event in the history of psychological study in this country. It is evidence of the growing importance which is being attached to this subject, and it implies that psychology, whatever relations it may have with other studies, and in particular with physiology and the circle of the other philosophical disciplines, requires to have its own specific, independent treatment. An equally significant feature of this foundation is its recognition of the unity of psychological study and of the scientific necessity of uniting all branches of the subject in one department. It has seemed appropriate that at the Inauguration of the Lectureship I should sketch in general outline the work which an adequate development of this study would cover, and therefore I shall invite your attention to some observations on the scope of modern psychology. It need hardly be said how deeply I feel, in entering on my duties, the responsibility involved in continuing and developing the work that has been carried on here with such distinction in the past.

I referred a moment ago to the unity of psychological study. But it is precisely this unity which might seem to the ordinary observer to be entirely lacking. For you have analytic, experimental, and physiological psychology; you have general psychology, individual, and comparative psychology, not to mention other divisions. And there is not merely

a legitimate diversity of topic ; there is a difference of stand-point and method, which has sometimes brought with it an unfortunate hostility, showing itself in a rather patronising and contemptuous sense of superiority on the part of the philosopher, and in an ill-judged and petulant disregard of older work on the part of the experimentalist. It will be assumed here without further words that the hostility is due merely to misunderstanding, or intolerance ; and instead of calling your attention to what might seem an incongruous aggregation of investigations, I shall ask you to consider the work that has been done as a work of continuous progressive enrichment in scope, in detail, and in method.

Fifty years ago it was sufficient for the teacher of psychology to describe it, with Hamilton, as the inductive philosophy of the mind, the science conversant about the modifications or states of the mind, or conscious subject, or soul. Its rules of analysis were three :—that no phenomenon be assumed as elementary which can be resolved into simpler principles ; that no elementary phenomenon be overlooked ; that no imaginary element be interpolated. The main result of this analysis, as you know, was an elaborate scheme of powers, or faculties, found in the developed mind. Finally, in regard to the relation of mind and body a contented ignorance was counselled as the most philosophical attitude, the sum of our knowledge being that the mental modifications are dependent on certain corporeal conditions of the nature of which we know nothing. It is true that very different presentations of psychology had been given before that time, but it can hardly be said that they formed part of the main stream of academic instruction in this country.

To-day we have to take account not merely of developed adult human experience, but of the experience of the child, the savage, the mentally abnormal individual, and of the

animal. There has grown up a branch of study—physiological psychology—which studies in detail the connexions of mind and body. And the most significant fact in regard to another great branch of study—experimental psychology—is that it has taken to heart the problem of method, of detailed systematic procedure, and is solving it by an ever widening application of precise method with quantitative formulation of results.

What is the underlying meaning and significance of this change? I believe that while partly, no doubt, due to dissatisfaction with older methods of treatment as such, it is to be accounted for mainly by a positive and much more fundamental consideration. Within the last century men have had their mental vision directed, more than ever before, to the concrete richness both of fact and of relation in all parts of experience, and not merely to the relations holding in the present, but to the bonds which unite us inevitably to all that has gone before in the history of the physical, the animate, and the mental worlds. No part of the universe stands isolated, apart: whatever significant specific characteristics each form of existence may possess, it is yet believed to be moulded and determined in its own special sphere by the world beyond. As a clear sign of this growing consciousness of relation, it should be remembered that recent years have witnessed the development into extensive and important branches of knowledge of borderland sciences such as physical chemistry, bio-chemistry, and the study which now specially interests us—physiological psychology. In this way, we may say, natural science is teaching the same lesson as philosophy—that the truth of experience lies in relation, and that to treat objects in abstraction and isolation is to mutilate the real life of things.

Human life has inevitably come within the scope of this great movement of thought, and it is to this influence that

we owe the varied development of psychological study to which reference has already been made. In this study the phenomena of developed conscious experience still remain, and must ever remain the central topic, as being the material which allows of the clearest analysis, and as providing the key to the interpretation of other forms of conscious experience. But when we pass beyond the work of describing and classifying the content of consciousness, and seek for an explanation of the changing flow of mental life, an account of its conditions and its consequences, we are driven to take into consideration physiological processes, in particular those of the sense organs, the central nervous system, and the muscular system. The acknowledgment of the connexion between mind and body is, indeed, no new thing. But the systematic work of demonstrating the connexions in detail is a new thing, for, in the absence of precise histological and physiological methods and results, nothing else had been possible save speculation and hypothesis. The justification for insisting on the thorough-going inter-relation of mental and organic processes is ample from the scientific point of view; it is ample also on philosophical grounds, for it is obvious that to treat the mind apart from the natural environment, in which alone it is known to us, is to get an unreal and untrue view of man's nature. It has been assumed, in what has just been said, that in completing our account of the varied flow of consciousness we must beg help of physiology. Attempts have indeed been made to fill up the gaps, to round off the ragged edges of conscious experience, by an appeal to a world of subconscious or unconscious mental life. But so long as we call in physiological hypotheses at any point for explanation, and so long as an extension of these hypotheses gives us a consistent and harmonious view of the whole psycho-physical life, it would seem that this appeal is unnecessary.

How, then, may the task of physiological psychology be

formulated? The first step which is implied is to determine the gross, as well as the minute structure of the parts with which consciousness is immediately related. But this step, however difficult and prolonged, is but a beginning. The next step is the properly physiological one of investigating the functions of these structures, of showing in what way they respond to stimulus, in what way they interact, under what conditions inner excitation is discharged in external movement. Even if this were complete, the most fundamental problem would still remain, viz., the bio-chemical problem of determining what molecular processes underlie all this complexity of structure and function. It is not to be thought that all this is the work of the psychologist. Just as the physiologist relies at each step of his work on the results of other sciences, on anatomy, physics, and chemistry, so the psychologist accepts from these sciences and from physiology all that they have to give, and then proceeds on the basis of a competent understanding of their methods and results to the further and specially psychological problem of determining the part all these factors take in shaping and modifying the appearance, the continuance and cessation, the forms and laws of connexion, of definite mental processes from the lowest to the highest.

There is no longer among reasonable men any tendency to resolve mental experience as such into physical processes: mental processes are acknowledged to be essentially unique, and qualitatively distinct from any material processes. There has, however, been a tendency to resolve the real life and activity of mind into physical causation, to make the hypothesis of the parallelism of physical and psychical processes the fundamental principle of explanation. This is not the occasion for extended argument, and therefore I will only say briefly that this idea of physiological and mental processes having nothing causally to do with each other

seems to me more plausible than sound. To determine precisely where there is physiological causation and where there is mental causation, may be extremely difficult, and in particular cases impossible, but I see no ground for rejecting interaction as a scientific principle. And it would seem that we attain to a far richer conception of mental life by abandoning the abstract separation of mind and body, and by taking as our guiding conception a principle analogous to that by which the relation of the living organism to its environment is regulated. Should the question be raised whether such a view does not in essence involve our regarding mental life as an incident in the play of natural forces, the answer will be twofold. From the limited point of view of science, mental life will be regarded as appearing at a given stage in the sequence of physical causation; but it will be the appearance, as was said, of something which is qualitatively new and unique. On the other hand, from the wider or rather the ultimate philosophical point of view it seems clear that, just as the stream rises no higher than its source, so no mere play of natural forces, no bare aggregation of molecules, suffices to explain the appearance of such a unique effect as mind. We can say with confidence that for such an effect adequate conditions must somehow be already given in the ultimate structure of reality. In what way we are to think the nature of that ultimate reality is clearly, however, not the problem of psychology, or of any special science, but only of the science of sciences—metaphysics.

Allied closely with the physiological consideration of human life is the biological consideration which has inevitably followed on the acceptance of the theory of evolution. It teaches us that only to a partial, abstract view is man a mere individual. The roots of his physical and moral being stretch into the far past: the currents of feeling, impulse and instinct which flow through his life can be adequately

understood only when we think of his life as being continuous through heredity with the mental life of the race and of prehistoric ages. But it is important to note that it is an incomplete statement to speak merely of the lines of human activity as being dominated by the foregoing organic series. The prevailing tendency in earlier stages of biological development consists in adaptation to a comparatively limited and fixed environment, and this adaptation, fixed like the environment, shows itself in structure and function transmitted with little change from generation to generation. At these stages the central nervous system shares in the definiteness and fixity of adaptation, as we see from the definite instincts of the various animal species. But while the animal on the whole solves the problem of conservation of life by precise adjustment, man, on the other hand, solves the problem in a relatively new and original way—through the development of a brain which is comparatively poor in precise, fixed adjustment, which is much less definitely equipped to begin with for the work of life, but which is open to fresh impression, to fresh determination in each individual life. Just because the animal acts so appropriately through the hereditary mechanism of instinct, its brain is less open to fresh acquisitions and is limited to reactions already acquired; man's brain, in which this mechanism is much less strongly represented, can learn by experience, and to his progress no limits are set. Therefore the main problem here is to state how far, and in what way, man's lines of activity and forms of experience are the reproduction in the individual of adjustments that have been developed in the past struggle for existence, and how far, on the other hand, that activity is to be explained by the existence of an undetermined and therefore educable central nervous system, which renders him in the end the master and not the slave of environment.

I have spoken thus far of the biological view as helping us

to understand man's life: regarded in this way, it is a method for analysing the human mind. But this treatment requires to be supplemented by that other, which regards the mental experience and behaviour of animals as independently interesting in its presentation of other types of mentality than our own. It is, of course, true that we have no stringent proof of conscious experience in animals, and there is a school of German biologists who insist that the only scientific treatment of these matters is that of comparative physiology. But in this matter wisdom surely lies with those who look on animal life as exhibiting varying types of mind of higher and lower degrees of development, and who labour on the basis of precise observation and of experiment to build up a true psychology of the animal mind.

Just as the understanding of what man now is involves the study of preceding evolution, so the understanding of the adult developed experience is incomplete, unless we keep clearly before our minds that this experience is the product of a development in the life of the individual. The infant is born with the scantiest equipment for the work of life: before this point come the various stages of embryological development: after this come the stages of gradual advance to intelligent, responsible action. Accordingly any account of the properties of thought and will which are the distinctive marks of the human being must, if it is to be real and true, exhibit these properties as growing out of earlier stages in which they were absent. In this way the history of mental growth becomes an important method for unravelling problems of our complex mental life, just as biological psychology in its way is a method. But here again it must be insisted that the stages of growth and the forms of child life are independently interesting, and not merely useful as a logical tool for the purposes of general psychology. The study of human growth is of the highest importance as a part

of the science of comparative psychology, taken in its broad sense as dealing with those forms of mind which find their meaning when interpreted by the principle of development.

The consideration of growth and evolution requires to be completed by the consideration of regression and degeneration. And just as no view of human life can be true which does not fully include the fact of growth, so no view can be true which does not frankly include and give their full significance to the facts of mental disease, abnormal personality and arrested mental growth. It is not, of course, meant that the student of psychology should possess that detailed and practical knowledge of mental pathology which is proper for the student of medicine. But unless the facts are known, and unless the psychologist has a living acquaintance with this aspect of life, his theories of personality will be very apt to lack reality and to lose touch with things as they are.

One more division of our study may be touched on now. It is clear to all of us that man has become what he is as an ethical and intelligent personality through his relations to his fellow-men in the various forms of social organisation. But the recognition of this fact draws with it the implication, that in attempting to give a complete statement of the factors moulding man's life our psychology of individual minds must be supplemented by a psychology of social relations. The importance of this branch is seen when we reflect that it has to show, among other things, how through the social environment the individual personality attains his realisation as a self-conscious and responsible agent, how those characteristics are formed which fit him to take his part in social life, and what modifications his actions undergo so far as he is a member of a crowd, or an organised community. There may also be mentioned here the study of the characteristic mental traits of peoples and races. Closely related to these lines of study is another group of investigations

dealing with primitive forms of life, which may conveniently be termed anthropological. These investigations have for their aim the discovery of the general principles according to which the common social life in its earlier prehistoric stages expressed itself in the forms of language, myth, custom and morality.

The principle which has been employed hitherto in drawing the bounds of the science, has been a consideration of the concrete nature of mind in the manifold relations of the actual process of life. But it is not merely in this respect that the principle is of value; it has found significance as well within the central facts of the science, in the description of the individual's inner experience. The older theory of mental atomism and of a mechanical association of ideas, valuable at a former stage in the history of psychology, has gone, or rather, we should say, has been transformed, because it is recognised to be out of conformity with the real continuous flow and interplay of mental life. In like manner, theories of mental faculties and of a subject that acts upon and rationalises experience can take their place in modern psychology only through an analogous transformation. Formerly the discussion of psychological problems, such as those already referred to, was carried on mainly in the interests of idealism or empiricism, and whatever conclusion was reached was inevitably open to the suspicion of being motived by the prior interests of the inquirer. The investigation of the inter-connexion of mental processes was confused by the ethical dispute between freedom and necessity; the problem of the empirical element in experience was discussed in relation to scepticism such as that of Hume; it was feared that the admission of mental development would threaten the foundations of morality. It is now evident that only on the basis of the strictly disinterested, concrete treatment which is aimed at in the scientific study of psychology can confidence in conclu-

sions be established. The assumptions and principles which psychology, like other sciences, employs, ought to be and are simply such as give the most harmonious interpretation to the whole range of actual, related experience.

Experimental psychology has been already referred to as evidence of the importance assumed by the study of method, and it is from this point of view that I would ask you to glance for a moment at its problems. The sphere of experimental psychology is in general the same as that of descriptive or 'introspective' psychology, for both appeal to conscious experience for their data, and both aim at a systematic account of this experience. Unquestionably, before the advent of the experimental treatment much had been achieved in the observation and classification of mental functions and in the analysis of complex states into simpler elements. But the prevailing tendency in the work of the older psychology was towards generality and abstraction. It was wont—I take the phrase from Bain—to "roam at large over the accessible facts of psychical life." But such roaming is characteristic rather of the beginnings than of the developed state of a science. One misses indeed in this type of psychology an adequate study of its method, a systematic account of the procedure which is employed in the observation and the reflective analysis on which it is based. And yet the only guarantee for orderly continuous advance in science lies in the possession and persistent application of systematic recognised rules of procedure for the ascertainment of facts and for determining their laws. It is in its method, and not in the possession of instruments and laboratories, that the real meaning of experimental psychology is to be found. These are necessary indeed in psychology, as in other natural sciences, but here, as in the other sciences, their function is simply that of being adjunct and auxiliary to

general method. Experimental psychology should be understood, not to antagonise the older psychology, but to supplement its work by insisting on the importance of precise problems and of definite answers reached by acknowledged methods. Observation of the normal flow of consciousness, reflective analysis of mental products and experimental procedure have each their place, but that place is not one of isolation ; each taken by itself is apt to lose something of the total fact ; each can work most effectively through the assistance and control of the other.

Closely connected with the experimental treatment there is to be noted the mathematical treatment of psychology. The emphasis here has sometimes been laid too much, it would seem, on the wrong aspect of this treatment. It has been taken to mean that psychical content is measurable in terms of definite units or psychical quantities. But this view is not the only one possible, and it seems in general more fruitful to regard the application of measurement not as involving any particular theory of psychical elements, but rather as an extension of method. From this point of view the introduction of quantitative treatment means fundamentally the attempt to give to our statements of fact and law the greatest possible definiteness and precision : it means that we take the statements constantly made regarding identity and difference, degree and connexion in mental experience, and attempt to give them precise formulation. In doing so, however, it seems by no means necessary that we should regard mental measurement, whether in its more limited psycho-physical employment, or in its more general statistical form, as requiring precisely the same conceptions as are utilised in dealing with physical objects. The mathematical treatment has appeared with great distinctness twice in the history of psychology — in the work of Herbart and of Fechner. Important as the system of Herbart was in its

criticism of the theory of mental faculties and in its application to psychology for the first time of mathematical conceptions, his investigations have not received the development and extension granted to the work of Fechner. The fact that the work of Fechner has been more fruitful, and that the development initiated by him has been unceasing and ever widening in its scope, is due not to his use of quantitative conceptions mainly, nor to the interest of the facts embodied in Weber's law, but rather to his attitude towards empirical fact and to his great achievement in the creation and elaboration of psycho-physical method.

The remark is sometimes made with regard to the accumulation of detailed fact and method in modern psychology, that it is of little value in the ascertainment of general principles, and that it hardly touches the more subtle processes of thought and will. This suggestion, that modern work is busied essentially with more or less irrelevant detail, is partly incorrect and partly a sign of the unfortunate confusion between the work of psychology and of other disciplines, such as epistemology. The philosopher has his interests and aims, and for long in the history of our science, as we have seen, psychological fact was studied in order to provide evidence for philosophical theories in regard to the wide-reaching problems of conduct and knowledge. It is now recognised that psychology has its own distinct province, and that its work is in the strict sense scientific. But still the old idea lingers, that because psychology is not dealing with the high philosophical themes of the past, it is vainly ploughing the sand of particular empirical fact.

That experimental psychology has on the whole preferred not to deal with the more abstract forms of thought and will, is due mainly to the general rule of scientific procedure, that the key to the complex and difficult problems is to be found in the study of what is relatively simple and concrete.

It is not because there is a particular limited province of mind in which alone scientific method has sway, that modern investigators have dealt so often with reaction experiments and with the phenomena of sensation. They began with these topics merely because they were the simplest, and most easily investigated. And the history of recent years of investigation has been a record of steady, victorious advance from one apparently insoluble problem to another. Yet in all the variety and interest of the latest investigations, let us not forget that even in the investigation of such an apparently simple problem as the discrimination, say, of two intensities of sound, there is ample opportunity for skilled introspection. For in such a case there are present the processes of perception, reproduction, comparison, of hesitation and doubt, or conviction and decision; the result is modified by the play of interest or ennui, the degree of attention, the general condition of freshness or fatigue. The experiment is, in reality, a veritable microcosm of the mental life. Indeed, the difficulty for the experimentalist lies often just in the elusive subtlety and intricacy of what seem to be simple experiences. He is forced, in order to make any progress in analysing the complexity, to adopt an abstract procedure, and to conduct his observations in such situations and by such methods as will assist in reducing the complexity. But such a procedure is characteristic of all science, and indeed of all thought, in its first stages: the recognition of the abstractness of psychological method and result, and its correction in view of the unity of personal experience, form but another and complementary step in the scientific advance. If it be suggested that the experimentalist sometimes fails to see the wood for the trees, the answer, equally true in its way, will be that the vision of a wood in general can hardly be regarded as a finally satisfying object of investigation.

It might be urged, finally, that a review, such as has been given, of the topics of modern psychology makes evident, in its emphasis on the advance along the lines of natural science, that what may be termed the more spiritual aspects of man's nature were being neglected. A moment's consideration will show the true state of the case. The scientific study of mind and its relations has had the requisite attention given to it only since the middle of last century. A few dates of important historical points will make this clear. Lotze's *Medizinische Psychologie* was published in 1852; Fechner's *Elemente der Psychophysik* in 1860. The work of Helmholtz on *Physiological Optics* began to appear in 1856, while his volume on *Tone Sensations* was published in 1862. Wundt's text-book on *Physiological Psychology* appeared first in 1874, while his psychological laboratory, the first that had been seen, was officially recognised by the University of Leipzig in 1886, after it had been working unofficially for a few years. With so much ground to cover on the scientific side of the subject, it was most natural and proper that the work which his hand found to do should be done by the psychologist with all his might. But it is the complete human being that is the object of our study, and, therefore, whatever temporary stress has been laid on the natural features of his life, the investigation of the more ideal activities, deepened and enriched by the scientific scrutiny, must complete the study. It appears essential that the psychologist should recognise as an ultimate factor in man's life the objective reference which in its abstract form becomes the consciousness of truth on the one side and of duty on the other. There is a psychology of logic as well as of ethics and æsthetics, and these departments contain some of the hardest of all the problems of our science. In recent years, to mention one advance, significant contributions to the study of cognition have appeared in the work of Meinong

and others, one important mark of these investigations being their intimate contact with concrete fact. And now that it is clearly recognised that the problems of logic, ethics, and metaphysics are distinct from those properly belonging to psychology, though closely related to them, there is hope for a solution of the problem of personality which will do justice both to the natural and the ideal aspects of man's activity; both to the slow, halting, and empirical character of man's advance in all his achievements, and to the ultimate rational structure which gives a meaning to development.

When the foundations of psychology are laid thus broad and deep, as they are being laid in modern investigation, the study of it gives a knowledge and a training which are of eminent value to the learner. The student cannot understand adequately the present position of the science without coming to know its past history and its philosophical affiliations, and without being inevitably brought into contact with the great masters of science and philosophy from Aristotle onwards. Its study brings him into close contact with the methods and results of the biological sciences, while at the same time he is learning to appreciate the elements and forces in the mental world, of which literature and art and all man's institutions are the historical expression. Reflective analysis of experience on the one hand is supplemented on the other by the training in exact scientific method which practical exercises in the psychological laboratory supply. There is thus ample justification for the contention that psychology is well fitted to take its place as an independent subject among the studies leading to graduation. And I am convinced that the training which a broad-minded study of psychology is fitted to give, would be of the highest value in the wider sphere of the national life. Is it not true that the educator, the preacher, the legislator, and the re-

former are accustomed to think too exclusively of what they wish the child or the man to become, and all too little of the actual complex subject on whom they mean to operate? It can hardly be doubted that their failures are in the main due to a miscalculation in regard to the mode of development, and to the strength of the motives, passions and instincts of the real, many-sided human being, and that the lack of power in social and educational affairs is due largely to lack of knowledge. There is no sphere of life which the study of psychology touches more intimately than that of education; there is none where its utility is more direct and evident. It is in the development of the teacher's power that, as I believe, our chief hope lies of bringing our culture to bear on the ennobling of the national life, and therefore I welcome the association between the work of this lectureship and the training of teachers, and trust that every advance in the study of psychology in this university will mean an increase of its value for education.

In conclusion, I should like to dwell for a moment on what is the most distinctive feature of the new foundation, viz., the psychological laboratory. Funds for the first equipment have been provided by the Combe Trustees—generous in this as in their provision for the establishment of the lectureship—and we hope that ere long the laboratory will have its local habitation, its array of instruments, and its groups of workers. Practical work in the laboratory forms now an essential, though by no means exclusive, part of psychological training. In addition to the discipline in scientific method which is secured, an opportunity is provided such as occurs nowhere else, for impressing on the student the actuality, the richness, the manifold interplay of processes in mental life. The ordinary student follows and repeats the work already elaborated by others. But the work of training cannot be carried out in its more advanced stages without



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leading the student on to the point where he undertakes original work and carries it out as far as possible by himself, in all the uncertainty and drudgery that surround the path of the independent investigator. It is only in carrying on research that the full meaning of scientific psychology can be seized and the mental habit acquired of aiming continually at the ascertainment of truth, even though it seem trivial, and at the testing and verification of hypotheses. Original investigation has thus an important office, as providing the highest form of training, but it has another duty as well, the duty of helping in the great work of building up the science, in the advancement of learning. Without the work of research, of contributing new truths to science, we are but intellectual paupers, absorbing and living on the spiritual achievements of those who have toiled before us in the search for truth. Therefore we trust that this new laboratory will take its due part in the scientific advance. But whether the work lies mainly in the way of training, or in the way of research, the laboratory ought to take its place as the centre of psychological thought and inquiry, both theoretical and experimental; where those who are interested in the study may meet for the interchange of ideas, and for the stimulus which comes from meeting others who are working in other branches, and with different methods, and where the co-operation of workers, which is so marked a feature of modern psychology, may be organised and furthered.